IN THE CLAIMS:

31. (previously amended) A method of DNA or RNA purification comprising:

placing a DNA or RNA containing sample in a first reservoir tube with a solution to effect release of DNA or RNA from cells in said sample;

inserting a wand into said first reservoir tube, wherein said wand comprises a cap, a sample collection assembly and an elongated shaft connecting said cap to said sample collection assembly, said sample collection assembly having microstructures for increasing the surface area of the sample collection assembly;

securely and sealingly closing said first reservoir tube with said cap of said wand with said shaft and said sample collection assembly inside said first reservoir tube;

agitating said first reservoir tube to mix said sample with said solution under conditions for releasing said DNA or RNA from cells in said sample and non-specifically binding said DNA or RNA to said microstructures of said sample collection assembly, thereby non-specifically binding said DNA or said RNA to said microstructures of said sample collection assembly;

removing said wand from said first reservoir tube and inserting said wand into a second reservoir tube, said second reservoir tube containing a wash buffer;

securely and sealingly closing said second reservoir tube with said cap of said wand with said shaft and said sample collection assembly inside said second reservoir tube;

agitating said second reservoir tube to mix said sample with said wash buffer under conditions to retain only said DNA or said RNA on said microstructures;

removing said wand from said second reservoir tube and inserting said wand into a third reservoir tube, said third reservoir tube containing an elution buffer, wherein said elution buffer causes release of said nucleic acids from said microstructures;

incubating said third reservoir tube; and

recovering purified DNA or RNA from said third reservoir tube.

32. (previously amended) The method of claim 31, wherein said sample capture assembly comprises a main body having one or more flanges with microstructures for binding target molecules.

33. (previously amended) The method of claim 32, wherein said microstructures are selected from the group consisting of cross-etched lanes, dimples, pillars and pores.

34. (previously amended) The method of claim 31, wherein said microstructures are selected from the group consisting of cross-etched lanes, dimples, pillars and pores.

35 (previously amended) The method of claim 31, wherein said sample collection assembly comprises a mesh outer surface wherein said microstructures are microparticles enclosed within said mesh outer surface.

38. (previously amended) The method of claim 31, wherein said microstructures of said sample collection assembly are coated with a material that binds non-specifically with nucleic acids.

63. (previously amended) A method of purifying specific DNA or RNA comprising:

placing a purified DNA or RNA sample in a first reservoir tube under conditions to denature double stranded DNA or render RNA suitable for binding;

inserting a wand into said first reservoir tube, wherein said wand comprises a cap, a sample collection assembly and an elongated shaft connecting said cap to said sample collection assembly, said sample collection assembly having microstructures for increasing the surface area of the sample collection assembly, and said microstructures of said sample collection assembly are coated with a coating comprising sequence specific oligonucleotide probe, peptide nucleic acid probe through a linker arm, or biotin-streptavidin bond to capture specific target DNA or RNA;

securely and sealingly closing said first reservoir tube with said cap of said wand with said shaft and said sample collection assembly inside said first reservoir tube, and incubating said DNA or said RNA of the sample in the sample collection assembly under conditions whereby stable, specific hybridization structures are formed, thereby binding said specific DNA or said specific RNA to said coating on said microstructures of said sample collection assembly;

removing said wand from said first reservoir tube and inserting said wand into a second reservoir tube, said second reservoir tube containing a wash buffer;

securely and sealingly closing said second reservoir tube with said cap of said wand with said shaft and said sample collection assembly inside said second reservoir tube;

agitating said second reservoir tube to mix said sample with said wash buffer under conditions to retain only said DNA or said RNA on said microstructures;

removing said wand from said second reservoir tube and inserting said wand into a third reservoir tube, said third reservoir tube containing an alkaline elution buffer to effect release of said DNA or said RNA;

incubating said third reservoir tube;

removing said sample collection assembly from said third reservoir tube;

adding neutralization buffer to said third reservoir tube to stabilize said DNA or said RNA; and

recovering said specific DNA or RNA from said third reservoir tube.

64. canceled

68. (previously amended) The method of claim 63, wherein said DNA coating is single stranded DNA and double stranded hybridization structures are formed.

69. (previously amended) The method of claim 63, wherein said DNA coating is double stranded DNA and triplex hybridization structures are formed.

70. (previously added) A method of purifying specific DNA or RNA comprising:

placing a purified DNA or RNA sample in a first reservoir tube under conditions to denature double stranded DNA or render RNA suitable for binding;

inserting a wand into said first reservoir tube, wherein said wand comprises a cap, a sample collection assembly and an elongated shaft connecting said cap to said sample collection assembly, said sample collection assembly having microstructures for increasing the surface area of the sample collection assembly, and said microstructures of said sample collection assembly are coated with a coating comprising sequence specific oligonucleotide probe, peptide nucleic acid probe through a linker arm, or biotin-streptavidin bond to capture specific target DNA or RNA;

securely and sealingly closing said first reservoir tube with said cap of said wand with said shaft and said sample collection assembly inside said first reservoir tube, and incubating said DNA or said RNA of the sample in the sample collection assembly under conditions whereby stable, specific hybridization structures are formed, thereby binding said specific DNA or said specific RNA to said coating on said microstructures of said sample collection assembly;

removing said wand from said first reservoir tube and inserting said wand into a second reservoir tube, said second reservoir tube containing a wash buffer;

securely and sealingly closing said second reservoir tube with said cap of said wand with said shaft and said sample collection assembly inside said second reservoir tube;

agitating said second reservoir tube to mix said sample with said wash buffer under conditions to retain only said DNA or said RNA on said microstructures;

removing said wand from said second reservoir tube and inserting said wand into a third reservoir tube;

heating said third reservoir tube under conditions to effect release of said DNA or said RNA from said microstructures;

removing said sample collection assembly from said third reservoir tube; and

recovering said specific DNA or RNA from said third reservoir tube.